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Case

Out-West Products, Inc.: A financial modeling and decision analysis case

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ABSTRACT

The Out-West Products, Inc. instructional case requires students to build a comprehensive financial model to support planning and decision-making. Part 1 of this team-oriented Excel project requires students to construct a baseline model, while Part 2 provides sensitivity analysis and decision-making extensions. The case incorporates cost-volume-profit, accounting income versus cash flow, and benchmarking analyses. Case objectives provide students with a realistic financial modeling experience that includes: building models; linking data across financial statements; testing solutions and analyzing scenarios; and improving critical thinking skills. These objectives closely align to the AICPA Core Competency Framework for Entry into the Accounting Profession. The case can be used in introductory and upper-division managerial accounting, upper-division cost accounting, and MBA managerial accounting courses, and can be modularized to achieve instructor-specific objectives.

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1. Introduction

Accounting practitioners, professional organizations, and educators continue to advocate greater relevance in accounting education. The profession demands accounting graduates with financial modeling, critical analysis, and decision-making skills. In addition, the AICPA Core Competency Framework for Entry into the Accounting Profession (AICPA, 2000) identifies decision modeling as a functional competency closely aligned with providing value to business organizations. Specific elements of decision modeling include the ability to build models, test solutions, link data for decision-making,

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and analyze scenarios.² Practitioners also indicate that proficiency in Excel is a critical skill that should be integrated into the accounting curriculum through assignments and projects (Borkowski, Bukics, & Welsh, 2007).

While most accounting textbooks include Excel assignments, none require students to construct a comprehensive, assumptions-driven financial model with extended sensitivity analysis. Available instructional resources tend toward basic spreadsheet applications with limited sensitivity extensions. Thus, Out-West Products, Inc. (OWP) fills a gap in available instructional resources by providing a comprehensive model building case with wide-ranging sensitivity analysis.

Out-West Products, Inc. emphasizes financial model construction and the use of prospective financial statement information for decision-making within a practical, team-oriented setting. While the case has particular interest for accounting majors, managerial planning and decision-making applications make it relevant for all business students. The OWP case can be modularized to achieve instructor-specific objectives at the undergraduate and MBA levels. We assign the case following coverage of cost behavior, budgeting, and cost-volume-profit analysis to provide for requisite foundational knowledge, and have integrated it into introductory and upper-level managerial and cost accounting, as well as MBA managerial accounting courses.

The remaining sections of this paper include the case materials as assigned (including the Excel financial model templates), implementation guidance and teaching notes, and case solutions.³

2. Case materials

This hypothetical case consists of two parts. Part 1 includes background information and basic model assumptions that are necessary to complete a baseline financial planning model within Excel. Part 2 presents decision-making and sensitivity analysis requirements.

2.1. Background

Cynthia Valley formed Out-West Products, Inc. in 2003 when she obtained an exclusive franchise to nationally distribute a pen-based input device that provides effortless communication with standard personal computers. Recent high sales growth of the base model pen-based input device (PID-B), along with expected sales growth for a new premium model (PID-P), requires adding management team members. The company has hired you as a financial analyst to assist with the financial planning function. Your first assignment is to help complete a financial plan for the next 3 months, starting July one. Since you are anxious to make a favorable impression on Ms. Valley, the President of OWP, you immediately begin to assemble pertinent information.

Ms. Valley is keenly aware of other growth-oriented companies within the high technology sector that have run out of cash and gone into bankruptcy. Seeing potentially viable businesses fail particularly concerns Ms. Valley and, consequently, she wants to ensure that sufficient cash will be available to accommodate OWP's expected growth. Thus, on your first day, Ms. Valley meets with you to emphasize why the company must thoroughly assess the impact of OWP's planned growth on cash flow. She would like to present the financial plan to OWP's board of directors and requests a financial model that can be used to address questions from top management and members of the board of directors. She would also like to provide the board with a graphical cost-volume-profit analysis.

2.2. Company information

From your prior education and work experience, you understand that the starting point for a financial plan is a reliable sales forecast. Thus, you confer with Bud Sellums, the sales manager, along with

² Boer (2000) also suggests that instructors consider strategic issues and emphasize dynamic cash flow to increase the relevancy of accounting courses. Boer affirms that accountants must add value to organizations by assisting managers in modeling business problems for financial analysis and decision-making.

³ An Excel template for the financial model was created to facilitate consistent implementation and successful completion of the project. The template is available for downloading from the second author's web page at www.personal.psu.edu/cab51/.

an outside marketing consultant. Bud has studied industry sales and economic trends, along with other important market factors within the highly competitive handheld computing industry to establish a unit sales forecast. As shown in Exhibit 1, total monthly unit sales volume is expected to continue increasing over the third quarter, but with sales mix shifting toward the new premium model (PID-P).

In addition, you determine through discussions with the accounts receivable manager that all sales to retailers are on account, with no discount, and payable within 15 days. However, the manager indicates that only 20% of a month's sales are typically collected by month-end. An additional 50% is collected in the month following, and the remaining 30% is collected in the second month following sale. Thus far, bad debts have been negligible due to diligent collection efforts.

Since Out-West Products does not want to forfeit market share to competitors, it maintains a policy to never stock out of its pen-based input devices (PIDs). Therefore, the company maintains desired ending inventories equal to 75% of the next month's unit sales. Prior to June, OWP sold only the basic model (PID-B) at a price of \$230 per unit. OWP purchases the PID-B model from an overseas manufacturer for \$155 per unit. The company pays for inventory purchases as follows: 50% in the month of purchase and the remaining 50% the following month. In June, OWP began carrying a premium model PID-P, priced at \$380, which costs \$225 from the manufacturer. The current sales mix is 80% PID-B and 20% PID-P. However, the company expects this mix to shift toward the premium model, along with ongoing competitive pricing pressure (see Exhibit 1).

The company's monthly operating expenses (organized by cost behavior) are provided in Exhibit 2. For simplicity, the company assumes that all operating expenses are paid in cash during the month incurred, with the exception of depreciation and insurance expense. New fixed assets, including personal computers and office furniture, are expected to be purchased during September for \$100,000 cash. The company, which is privately owned with Ms. Valley as the majority shareholder, declares

Unit Sales	Actual Sales Volume			Forecast Sales Volume				
	April	May	June	July	August	September	October	
Total	7,650	8,400	9,200	10,200	11,400	12,700	13,200	
BASE	7,650	8,400	7,360	7,956	8,550	9,017	9,240	
PREM	n/a	n/a	1,840	2,244	2,850	3,683	3,960	
		Sales Mix	Sensitivity	>	2%	3%	4%	1%
Sales Mix %	BASE		80%		78%	75%	71%	70%
	PREM		20%		22%	25%	29%	30%
		Sales Price	Sensitivity	>	-2.00%	-2.00%	-2.00%	-2.00%
Sales Price	BASE		\$ 230		\$ 225	\$ 221	\$ 216	\$ 212
	PREM		\$ 380		\$ 372	\$ 365	\$ 358	\$ 350
Unit Cost	BASE		\$ 155		\$ 155	\$ 155	\$ 155	\$ 155
	PREM		\$ 225		\$ 225	\$ 225	\$ 225	\$ 225

Exhibit 1. OWP's sales forecast and other sales information.

<i>Variable:</i>	
Sales commissions (% of sales dollars)	5.0% of sales
Shipping & handling (per unit sold)	\$15.0 per unit
<i>Fixed:</i>	
	(per month)
Wages and salaries	\$ 315,000
Rent	26,000
Utilities	9,500
Insurance expired	4,500
Depreciation	16,000
Other S&A	38,000
Advertising Campaign	As indicated in Part II

Exhibit 2. OWP's planned operating expenses per month.

Assets	
Cash and equivalents	\$ 47,000
Accounts receivable (\$579,600 from May sales; \$1,913,600 from June sales)	2,493,200
Inventory (7,650 units)	1,292,850
Prepaid insurance	20,000
Fixed assets, net of depreciation	1,480,000
Total assets	<u>\$ 5,333,050</u>
Liabilities and Stockholders' Equity	
Accounts payable, purchases	\$ 889,075
Line-of-credit	0
Dividends payable	20,000
Capital stock, no par	1,750,000
Retained earnings	2,673,975
Total liabilities and stockholders' equity	<u>\$ 5,333,050</u>

Exhibit 3. OWP's (actual) balance sheet as of June 30.

dividends of \$20,000 at the end of each quarter, payable in the first month of the following quarter. Out-West Products' actual balance sheet, as of June 30, is provided in [Exhibit 3](#).

Although OWP currently has no debt, the company has recently established a revolving line-of-credit through which it can borrow from The Bank of Bay Area at 8% annual interest. For simplicity, assume that interest expense is recognized during the month incurred, while cash payments for interest occur 1 month in arrears.

Required borrowings are made at the beginning of a month, and repayments at the end of a month in any dollar amount. Out-West Products wishes to use any excess cash to pay off loan principal as rapidly as possible. However, the company also desires a minimum ending cash balance each month of \$40,000 to provide flexibility in meeting regular operating expenses. To simplify, assume no tax consequences.

2.3. Industry benchmark data

One of Cynthia Valley's priorities as President is to ensure that OWP remains highly competitive within the industry. She has contacted a benchmarking consultant to provide data regarding the performance level of other companies and the key competitor within the industry. Selected benchmarking data for assessing profitability and working capital management, relative to competing firms, are provided in [Exhibit 4](#). The consultant recommends that OWP use this benchmarking data to assess its competitive position and to achieve ongoing operational improvements.

Ms. Valley requests that you, as part of the financial plan, assess OWP's performance relative to its key competitor, as well as the industry for the selected financial metrics. She also desires recommendations for improvements where the metrics reveal sub-par performance for OWP.

<i>Financial Metric</i>	<i>Key Competitor</i>	<i>Industry Average</i>
Operating Margin Percentage: (operating income ÷ sales)	8.9%	8.2%
Days Sales in Ending Accounts Receivable: (ending accounts receivable ÷ (average sales per day))	28 days	31 days
Inventory Turnover: (cost of goods sold ÷ average inventory)	17.2 times	13.9 times
Asset Turnover: (sales ÷ average total assets)	5.6 times	5.3 times

Exhibit 4. Benchmarking data.

	A	B	C	D	E	F	G	H	I	
1	Out-West Products, Inc.									
2	Key Assumptions									
3										
4	Unit Sales					Unit Volume Sensitivity -->			0.0%	
5										
6	UNIT SALES			ACTUAL			FORECAST			
7	Month	July	August	September	October	November	December	January		
8	TOTAL	7,650	8,400	9,200	10,200	11,400	12,700	13,200		
9	PID-B	7,650	8,400	7,360	7,956	8,550	9,017	9,240		
10	PID-P	-	-	1,840	2,244	2,850	3,683	3,960		
11	TOTAL	7,650	8,400	9,200	10,200	11,400	12,700	13,200		
12						Overall Sales Mix Sensitivity -->			0.0%	
13						2%	3%	4%	1%	
14	Sales Mix %	PID-B		80%	78%	75%	71%	70%		
15		PID-P		20%	22%	25%	29%	30%		
16						Overall Sales Price Sensitivity -->			0.0%	
17						-2.00%	-2.00%	-2.00%	-2.00%	
18	Unit selling price	PID-B		\$ 230	\$ 225	\$ 221	\$ 216	\$ 212		
19		PID-P		\$ 380	\$ 372	\$ 365	\$ 358	\$ 350		
20										
21	Unit cost	PID-B		\$ 155	\$ 155	\$ 155	\$ 155	\$ 155		
22		PID-P		\$ 225	\$ 225	\$ 225	\$ 225	\$ 225		
23										
24	Weighted Average Sales Price	\$ 260.00			\$ 257.74	\$ 256.91	\$ 257.42	\$ 253.65		
25	Weighted Average Unit Cost	\$ 169.00			\$ 170.40	\$ 172.50	\$ 175.30	\$ 176.00		
26										
27	Gross Profit %	PID-B		32.6%	31.2%	29.8%	28.4%	26.9%		
28		PID-P		40.8%	39.6%	38.3%	37.1%	35.8%		
29		WTD AVG		35.0%	33.9%	32.9%	31.9%	30.6%		
30										
31	Other Assumptions					Operating expenses				
32	Ending cash balance (per month)	\$40,000			Variable:					
33	Ending inventory as percentage				Sales commissions		(% of sales)	5.0%		
34	of next month's sales	75%			Shipping & handling		(per unit)	\$ 15.00		
35	Percentage of purchases paid in:				Fixed:				(per month)	
36	Current month	50%			Wages and salaries			\$315,000		
37	Following month	50%			Rent			26,000		
38	Percentage of sales collected in:				Utilities			9,500		
39	Current month	20%			Insurance expired			4,500		
40	Following month	50%			Depreciation			16,000		
41	Second following month	30%			Other S&A			38,000		
42	New fixed asset purchases <i>December</i>	\$100,000			Advertising Campaign			-		
43	Quarterly dividends	\$20,000								
44	Line-of-credit annual interest	8%								
45										
46										
47	Balance Sheet: Actual as of June 30									
48	Assets									
49	Cash & Equivalents				\$47,000					
50	Accounts Receivable	<i>May</i>	<i>June</i>		2,493,200					
51		\$ 579,600	\$ 1,913,600							
52	Inventory	7,650	units		1,292,850					
53	Prepaid insurance				20,000					
54	Fixed assets, net of depreciation				<u>1,480,000</u>					
55	Total Assets				<u>\$5,333,050</u>					
56										
57	Liabilities and Stockholder's Equity									
58	Accounts payable, purchases				\$889,075					
59	Line-of-credit				-					
60	Dividends payable				20,000					
61	Capital stock, no par				1,750,000					
62	Retained earnings				<u>2,673,975</u>					
63	Total liabilities and stockholder's equity				<u>\$5,333,050</u>					

SENSITIVITY ANALYSIS	
SUMMARY RESULTS	
Part 2: A2c	
Oper Income =	\$0
Line of Credit :	\$0
Part 2: B3a	
Inv Turnover =	0
Part 2: B3b	
Days Sales =	0

Exhibit 5. Assumptions Sheet.

2.4. Requirements

2.4.1. Part 1: construct a financial planning model⁴

Download and save the Excel template from the course web page and use it to complete the financial model relationships and perform the following estimations. Print your solution for each requirement to provide a hardcopy submission:

1. (a) Prepare a sales plan by month and in total. Include a schedule of projected cash collections from sales and accounts receivable, by month and in total.
- (b) Prepare a purchases plan in units and in dollars. Include a schedule of projected cash payments for purchases and accounts payable, by month and in total. Note: the cost of inventory on hand is assumed to be released to cost of goods sold before costs for the purchase of additional units, i.e., a FIFO cost flow is assumed for all months.
2. Prepare a projected contribution format income statement, by month and in total.
3. Prepare a projected balance sheet as of September 30. Hint: for July and August, compute the line-of-credit interest expense and then link (with a 1 month lag) to interest payments on the projected statements of cash flow (or vice versa). For September, compute the interest expense and link forward to interest payable on the projected balance sheet.
4. Prepare projected statements of cash flow, by month and in total. The first statement of projected cash flow is presented in an internal budget format. The second statement of projected cash flow is presented in an external financial reporting format. Note: projected cash flow should be consistent across formats.
5. Use the data in cells A14:H16 within the Graph worksheet to create a cost-volume-profit graph. Ensure that your graph closely resembles a standard CVP graph to receive full credit. You do not need to formally compute breakeven-points to complete this requirement.

2.4.2. Part 2: decision-making and sensitivity analysis

Part 1 provides the baseline scenario, which is the starting point for Part 2. Carefully review any formula errors identified by your instructor, and correct baseline model formulas prior to starting Part 2. Submit an updated Excel file to your instructor that contains corrected formulas. Your instructor will use your revised baseline model to test your sensitivity results. For each decision-making extension below, refer to the baseline and, unless stated otherwise, consider each situation incrementally from the baseline (with all other assumptions remaining unchanged). Respond to each question below and print relevant sections of your financial model to support your answers. At the bottom right-hand side of the Assumptions Sheet is a box titled “Sensitivity Analysis, Summary Results” that highlights summary results for Part 2, including Sections A.2c, B.3a, and B.3b. Print the Assumptions sheet for each requirement that shows the changes to inputs and summary outcomes as part of your hardcopy submission.

A. Cost-volume-profit and sensitivity analysis

1. Out-West Products’ marketing consultant suggests that the market for PIDs is becoming highly competitive. Due to competitive pricing conditions, sales prices must be reduced.
 - (a) Begin with the baseline. By what maximum percentage may OWP lower the unit selling prices every month for both products and still maintain breakeven operating income for the quarter? Confirm that you obtained breakeven *operating income* with the price reduction. [Hint: under TOOLS, Select GOAL SEEK, and SET CELL for quarterly operating income (Assumptions Sheet, cell I50) to “0” – BY CHANGING cell “I16” in Assumptions Sheet].

⁴ Depending on instructor preferences and pedagogical objectives, the documented case assumptions could be excluded from the financial planning model template. Exhibit 5 shows a completed Assumptions Sheet for the financial planning model template.

- (b) Use the weighted average unit contribution margin to compute the breakeven point in units for September, given the price reduction (remember to consider all variable costs).
 - (c) How much is the line-of-credit balance on September 30 with the price reduction? Assuming the price reduction, determine the percentage change in unit volume that is required to achieve breakeven *cash flow* for the quarter. Report and interpret your result.
2. Ms. Valley is disappointed with the baseline income projection. Bud Sellums suggests that an advertising campaign (at a cost of \$50,000 per month), combined with increases in sales commissions (increase from 5% to 8%) will improve unit PID sales and profitability.
- (a) Begin with the baseline. Incorporate Mr. Sellums' assumptions and then determine the percentage by which total unit PID sales must increase to achieve a quarterly operating income of \$1,000,000. [*Hint: use GOAL SEEK and SET CELL for quarterly income to \$1,000,000 – CHANGE CELL "I4" in Assumptions Sheet*].
 - (b) Continue with the revised marketing assumptions, but shift the overall sales mix sensitivity per month from PID-B to PID-P by an additional 5% (i.e., July – from 2% to 7%, August – from 3% to 8%, etc.). Given this shift, by what percentage must total unit PID sales increase to achieve quarterly operating income of \$1,000,000?
 - (c) Return to the baseline. Now, suppose that the PID-P product does not achieve sales growth expectations, but instead the sales mix remains constant at 80% (PID-B) and 20% (PID-P) throughout the projection period. Determine the differential operating income and line-of-credit balance relative to the baseline sales mix assumptions. Briefly explain the differences across your Scenario Result cells.
3. Now, assume that OWP's supplier experiences an increase in the cost of the special flash memory chip required by the premium model. The supplier has indicated that it will pass along the costs to OWP as an increase of \$21.00 per PID-P, beginning in July and extending throughout the remaining months in the projection period.
- (a) Begin with the baseline. Determine the projected operating income for the quarter, and ending line-of-credit balance, assuming that the cost increase occurs.
 - (b) By what percentage must total unit PID sales volume increase to maintain the same level of quarterly operating profit as before the cost increase?
 - (c) Could OWP achieve the same baseline operating income as before the cost increase by only shifting sales mix from PID-B toward PID-P, without increasing total unit sales volume? If so, what equal, monthly sales mix shift is required given the cost increase?

B. Income vs. cash flow and benchmarking analysis

1. Refer to the baseline projected income statement and statements of cash.
- (a) Compute and interpret OWPs "quality of income", where quality of income = operating cash flow ÷ net income. Operating cash flow = cash collections – cash disbursements before capital acquisitions.
 - (b) Explain why income is greater than operating cash flow and identify at least two specific areas in which Out-West Products may not be effectively using cash (focus on working capital components). [*Hint: examine operating cash flow items from the external format cash flow statement*].
 - (c) Briefly state other business risks that could affect OWP's financial strength.
2. Refer to the baseline and review the selected benchmarking information provided by Out-West Products' benchmarking consultant, as shown in **Exhibit 4**.
- (a) Compute (annualize as necessary) OWP's financial metrics for the projected quarter.
 - (b) Discuss how well OWP's expected performance measures compare to its key competitor and the industry averages? Explain your results.

3. The following questions illustrate how organizations can use financial models to improve operating performance, such as cash flow from operations and benchmarking targets. Refer to the baseline.
 - (a) Determine the percentage of ending inventory carried by OWP required to reach the key competitor's level of inventory turnover. Recall that the baseline assumption equals 75% of next month's sales. Describe the effect on the ending line-of-credit (or cash) balance.
 - (b) Begin with the baseline and assume that 50% of sales are still collected in the month following sale. What shift in the receivables collections pattern (the percentage collected in the month of sale) is required to achieve the key competitor days' sales in ending accounts receivable metric (28 days)? Also, determine the specific dollar effect on OWP's ending line-of-credit (or cash) balance if OWP achieves the key competitor performance for this metric.

3. Implementation guidance and teaching notes

While Out-West Products, Inc. focuses on financial model construction and decision-making, it also helps to integrate and reinforce basic financial accounting concepts that students should have previously learned. The case is versatile and is appropriate for pedagogical use at the following levels: (1) introductory and upper-division managerial accounting; (2) upper-division cost accounting; and (3) MBA managerial accounting. The authors and colleagues have integrated variations of this case project into these core courses for the past several years across five different universities.

The case has contributed up to 15% (25%) of the overall course grade for undergraduate (MBA) courses, respectively. An appropriate point in the semester for assigning the case is typically following coverage of cost behavior, budgeting, and cost-volume-profit analysis. This is consistent with results from a controlled experiment by Phillips and Vaidyanathan (2004), who indicate that students' case analysis performance is enhanced when a lecture precedes a case, because the lecture equips students with knowledge to apply to the case, and it constrains the number of irrelevant ideas that students apply to the case.

The case harmonizes with most introductory managerial accounting texts in a lower-division course. We have used the case at the introductory level with Garrison, Noreen and Brewer's (2008) managerial accounting text, where it integrates cost behavior concepts and analysis (Chapters 2 and 5); cost-volume-profit relationships and analysis (Chapter 6); profit planning and the master budget (Chapter 9); and relevant costs for decision-making (Chapter 13).

We find that most introductory students are capable of substantially completing the baseline financial model requirement in Part 1, although the weakest quartile of students or so at most public universities, along with those with Excel deficiencies, may require assistance to accurately complete all required formulas and reference links. Our experience also suggests that introductory students can also successfully work through basic CVP sensitivity analyses. For example, in Part 2, introductory students have successfully completed sensitivities A.1, A.2a, A.3a, and A.3b.

We have not assigned more complex sensitivity and benchmarking analysis (Part 2) to introductory students. Sales mix sensitivities and scenario analysis (A.2b, A.2c, and A.3c), quality of income and benchmarking analysis (B.1 and B.2), and benchmarking sensitivities (B.3a and B.3b) tend to require higher-level critical thinking skills that most introductory students have not yet developed. Such complex case requirements are better suited to advanced undergraduate and graduate students. The case integrates very well into Chapter 12 (Financial and Cost-Volume-Profit Models) of Hilton, Maher, and Selto's (2008) cost accounting text. At the MBA level, we have introduced the case in conjunction with Chapter 6 (budgeting) of Zimmerman's (2009) managerial accounting text.

Although OWP can be lengthy to complete when assigned in its entirety (a total completion time of about 10 hours for undergraduate students) it can be readily modularized to achieve instructor-specific objectives. For example, if the instructor's primary objectives are to develop basic Excel skills and to reinforce profit planning and financial statement relationships, (perhaps for introductory students), then only Part 1, which requires the completion of a baseline financial planning model, can be assigned.

Time required for undergraduate student teams to complete the first (second) parts of the project averages about 7 (3) hours. Part 2 of the case employs sensitivity analysis to facilitate decision applications for CVP analysis, income versus cash flow, and benchmarking analysis. Graduate students can

typically complete the case in a shorter time frame. We have also extended Part 2 requirements to include additional analysis, integration, and industry research to provide a more rigorous case experience to MBA students.

Exhibit 6 summarizes specific skills and competencies related to each case module. For instructor guidance, we reference each competency within the case to **AICPA (2000) Core Competencies**. In particular, our case emphasizes the following AICPA competencies: Functional Competencies of decision modeling and leveraging technology; Personal Competencies of problem solving and decision-making, as well as interaction; and Broad Business Perspective Competencies of strategic/critical thinking and industry/sector perspective. Educators can refer to **Exhibit 6** when determining which components of the case are most appropriate in achieving desired skills and competencies for their particular course. We also provide baseline scenario check figures (**Exhibit 7**) and quick Excel tips (**Exhibit 8**) to assist students in completing the case project.

Part 1: Financial Planning Model

Module / Topic	Specific Competencies Developed	AICPA Core Competencies
Budgeting, Planning, and Financial Modeling	1) Develop Excel skills	FC #1, FC #5
	2) Build financial model	FC #1, FC #5
	3) Link data	FC #1, FC #5
	4) Reinforce financial statement relationships.	FC #3

Part 2: Decision-Making and Analysis

Module / Topic	Specific Competencies Developed	AICPA Core Competencies
CVP and Sensitivity Analysis	1) Perform sensitivity analysis to determine: sales price for breakeven point; target profit; line-of-credit borrowing.	FC #2, FC #5, PC #1, BBPC #1
Income versus Cash Analysis	1) Emphasize differences between cash flow and accounting income; perform breakeven income and cash flow; examine working capital items affecting operating cash flow.	FC #2, FC #5, PC #1, BBPC #1
Benchmarking Analysis	1) Use financial metrics to evaluate relative performance and potential effects of performance improvement.	FC #2, FC #5, PC #1, BBPC #1, BBPC #2
Other Planning Issues	1) Examine financial model parameters and relations and assess operating risks.	FC #2, FC #4, PC #1, BBPC #1, BBPC #2, BBPC #3
Group Assignment Requirement	1) Develop group interaction, monitoring, and mentoring skills.	BBPC #2
	2) Develop leadership skills by assigning a lead group member (if any).	BBPC #3

KEY: AICPA (2000) Core Competencies Related to Out West Products, Inc. Case

AICPA - Functional Competencies

FC #1	Decision Modeling
FC #2	Risk Analysis
FC #3	Reporting
FC #4	Research
FC #5	Leverage Technology to Develop and Enhance Functional Competencies

AICPA - Personal Competencies

PC #1	Problem Solving and Decision Making
PC #2	Interaction
PC #3	Leadership

AICPA - Broad Business Perspective Competencies

BBPC #1	Strategic/Critical Thinking
BBPC #2	Industry/Sector Perspective
BBPC #3	International/Global Perspective

Exhibit 6. Summary of skills and competencies by module.

	A	B	C	D	E	F	G	H
1	1. Check figures for schedules							
2								
3	Out-West Products, Inc.							
4	Plans and Schedules							
5	Schedule a: Sales plan				July	August	September	Total
6	Credit sales, 100%				\$2,628,948	\$2,928,740	\$3,269,183	\$8,826,871
7								
8	Schedule b: Cash collections				July	August	September	Total
9	Total collections				\$2,301,390	\$2,617,822	\$2,906,891	\$7,826,103
10								
11	Schedule c: Purchases plan in units				July	August	September	Total
12	Required purchases				11,100	12,375	13,075	36,550
13								
14	Schedule d: Purchases plan (dollars)				July	August	September	Total
15	Desired ending inventory				\$ 1,456,920	\$ 1,643,063	\$ 1,735,470	\$ 1,735,470
16	Plus cost of goods sold				1,727,370	1,948,545	2,199,640	5,875,555
17	Total purchases				\$1,891,440	\$2,134,688	\$2,292,048	\$6,318,175
18								
19	Schedule e: Cash pmts for purchases				July	August	September	Total
20	Total payments				\$1,834,795	\$2,013,064	\$2,213,368	\$6,061,226
21								
22								
23								
24	2. Check figures for statements							
25								
26	Out-West Products, Inc.							
27	Projected Statements							
28	Projected Income Statements							
29	Operating Income				208,131	253,758	306,584	768,473
30	Less: Interest Expense				1,462	2,147	3,154	6,763
31	Net Income before Taxes				\$206,668	\$251,611	\$303,430	\$761,710
32								
33	Projected Statements of Cash							
34	Line-of-Credit Balance				219,353	321,994	473,076	473,076
35	Projected Balance Sheet							
36								September
	Assets							
37	Total assets							\$6,807,939
38	Liabilities and Stockholders' Equity							
39	Total liabilities and stockholders' equity							\$6,807,939
40								EQUAL
41								

Exhibit 7. Check figures.

Instructors can provide the Excel template as a separate file for downloading from Blackboard, or other web-based course page. Students should download and save the Excel template on a USB flash drive. We caution students to download the file intact since copying and pasting the template into a new Excel workbook may create problematic external links. These are not significant issues if dealt with appropriately by the instructor before beginning the project.

A more challenging financial modeling project involves assigning the case without providing the Excel template to students (i.e., having students design their own financial models using only general guidelines). However, our experience suggests that even strong students tend to struggle without a template structure. We note that using a common template also facilitates grading for the instructor. Each group submits a single Excel file electronically along with hardcopy printouts of the baseline

1. Begin every formula with an equal to sign (=). To pull data from the assumption sheet to another sheet, click on the cell you want the data in, enter an “=” and click on the cell within the sheet you would like to reference. Every cell, except cells in the assumption sheet, should be derived using spreadsheet formulas. You must use formulas so that a change in input data automatically updates your model.
2. Use brackets (), and the mathematical operators /, *, - and + to divide, multiply, subtract and add where necessary.
3. For Part 1, download and save the Excel template. DO NOT: Modify the format of the Excel Template; or attempt to complete the template directly from the course page; or copy and paste sheets into a workbook. Save your work as you complete the model.
4. For the CVP graph, click the Chart Wizard button on the Standard Toolbar to select a line chart style of graph. If the X-axis does not intersect the Y-axis at zero, change the Y-axis and X-axis intersection by selecting and clicking the X-axis, right clicking for the shortcut menu, choosing "format axis", selecting "scale" tab, and unselecting the box "Value Y-axis crosses between categories." For further editing, including the line weights, colors, and patterns, double-click the area of the graph to be edited. Add titles in Chart Options and place the chart on a new sheet.
5. For Part 2, all changes in assumptions should be implemented within the *Assumptions Sheet*. To perform a goal seek, select *TOOLS, GOAL SEEK* and *SET CELL* to target. To use the Scenario Analysis, select *TOOLS, SCENARIOS* and then *EDIT* Scenario within the *Assumptions Sheet*.

Exhibit 8. Quick tips for completing and using the financial model template.

financial model and sensitivity results. Submission of clearly labeled printouts can facilitate project assessment for instructors as well.

We remind students to regularly save their work and maintain backup files. Recall that for many introductory students who have not had much prior exposure to spreadsheets, additional assistance is likely required to work through the project. For example, students must create formulas or linkages for all components of the prospective financial statements, which requires them to think through changes to asset, liability and owners' equity accounts.⁵

In larger sections where many students have relatively undeveloped spreadsheet and accounting skills, required instructor assistance presents a potential implementation issue. However, instructors may mitigate this problem by assigning spreadsheet-based homework throughout the early part of the semester, which may enable deficient students to develop some basic spreadsheet skills (e.g., linking and entering formulas into cells) prior to beginning the case. A typical university course sequence also tends to combat this problem as many students take an introductory computer course prior to introductory managerial accounting.

From our experience, most upper-division accounting majors and MBA students are reasonably proficient in Excel. Thus we tend to allow students to form their own groups based on personal preference for upper-division and graduate level courses. However, at the introductory level, students have varying levels of proficiency with Excel. Thus, it can be advantageous to assign students to groups (two to three students each), based on their relative Excel competency. Instructors can identify Excel-deficient students assigning spreadsheet-based homework early in the semester.

By working in small groups, stronger students can assist weaker students in working through the more complex aspects of the financial model. Group size should ideally be restricted to three students

⁵ For example, ending projected retained earnings is computed by taking the beginning (actual) retained earnings balance, adding projected net income for the period and subtracting projected dividends. Similarly, ending property, plant and equipment is determined through the beginning balance, plus capital acquisitions less depreciation expense for the period. Although such computations are not particularly challenging, we find that even advanced students are often confused about constructing these relationships within a financial model.

so that they can learn effective group dynamics and share responsibilities, while avoiding excessive free-rider problems. We also caution students, who may not be accustomed to managing group dynamics, to maintain ongoing communication with group members during the project.

We do not assign the case too early in the semester, but provide sufficient time for students to complete the entire case within a 4–6 week period. As noted above, most of the textbook material needed to adequately complete the case would be covered during the first 6–8 weeks of a 15-week semester. Therefore, to ensure that students have appropriately been introduced to the concepts needed to complete the case, we present relevant textbook concepts prior to the case being assigned.

As indicated above, while some students are able to complete the financial model with no assistance, most groups will require at least some help completing the model. Minimal class time is used to address specific case material, however, we usually allow some time over a few class meetings to provide an overview of the project, explain critical areas, and answer specific questions. In addition, we maintain open door policies and encourage the use of e-mail to help groups that are having difficulty. Most groups take advantage of this open door approach to assisting with the financial model.

Although we initially designed the baseline model, sensitivities, and related analysis to be completed as a single project and submission, students had suggested that we partition the project into two phases with separate due dates. For undergraduate students, we now require each team to construct a properly working financial model before proceeding to Part 2 of the case. Groups that proceed to Part 2 of the case with a non-functional financial model may earn zero points for Part 2. This two-phase approach requires the instructor to first assign the baseline model to be completed over a 3-week period. Students must electronically submit their baseline financial models for review, grading, and correcting formulas prior to performing sensitivity analyses. Within one week or so, we review the baseline models and provide formula corrections for each student team before they can proceed to Part 2 of the case. However, at the MBA level, we continue to assign the case in its entirety (including key check figures so students have some initial guidance) with one final submission date.

Instructors can assess each baseline submission by changing key input parameters on the Assumptions Sheet ([Exhibit 5](#)) and observing whether recalculations correctly flow through to schedules and statements. This approach has the advantage of identifying in advance formula and reference errors that are likely to be problematic when students complete sensitivities in Part 2, and students gain confidence that their baseline financial model is properly constructed. Since financial models must articulate (i.e., communicate across all schedules and statements) to be functional as a decision-support tool, we deduct points whenever students do not use formulas within all spreadsheet cells.

A final consideration for instructors is the one-use issue. To prevent students from copying the assignment from students who completed it in prior semesters, we rotate four different companies with slightly modified assumptions for each semester, which in turn changes the prospective financial statement results. These modified cases are substantially similar, but contain enough changes to discourage academic dishonesty. For example, we change company names, employee names and job titles, company products, and selected financial model assumptions, which include a combination of ending cash balance, ending inventory percentage, percentages of purchases paid and sales collected, sales commission percentage. In addition, actual balance sheet amounts can be easily modified to alter the case results.

Thus, each company can be reused every four semesters, but with modified input assumptions. Such an approach, combined with the use of teams where students provide some monitoring of group members, tends to discourage unethical behavior by students across semesters. In addition, when instructors answer questions and provide financial modeling assistance as needed, students are more comfortable completing the case on their own.

We have conducted only informal student assessments to solicit feedback about the case. Overall, students perceive the case to be challenging, interesting, and an excellent learning tool. Several students have commented that financial managers within their workplaces are enthusiastic about students completing this case and perceive it to realistically illustrate planning and decision models used within their organizations. Limited student dissatisfaction stems from frustration due to a lack of basic Excel skills, time requirements to complete, and the challenging nature of the project. Hence, it is important to make sure that students have adequate prior exposure working with Excel spreadsheets with accounting applications.

4. Suggested solutions

The completed financial planning model solution for Part 1 of the case is presented in Exhibits 9–12. Following the solutions for the baseline financial planning model, we present suggested solutions for Part 2 of the case.

4.1. Part 2 solutions: decision-making and analysis

A. Cost-volume-profit and sensitivity analysis

1. (a) A maximum reduction of 6.47% in unit selling prices every month for both products would maintain the breakeven operating income for the quarter. Use Excel's Goal Seek function and set total quarterly operating income on the income statement to zero by revising cell I16 – Overall Sales Price Sensitivity – on the Assumptions Sheet.
 - (b) The breakeven point in units for September is 16,790 units. This is computed by dividing total fixed cost for September of \$409,000 by the “weighted average” contribution margin per unit of \$24.36. The “weighted average” contribution margin per unit is determined by dividing September's contribution margin of \$309,362 by September's total unit sales of 12,700 (obtained from Schedule A: Sales Plan).
 - (c) The line-of-credit balance on September 30 is \$821,979 from the balance sheet. With the same price reduction, the percentage change in unit volume required to achieve a “break-even cash flow” for the quarter is –33.4%. Use Excel's Goal Seek function and set the line-of-credit balance to zero on the balance sheet by changing cell I4 – Unit Volume Sensitivity – on the Assumptions Sheet.
2. (a) An increase of 37.6% in total unit PID sales would achieve a quarterly operating income of \$1,000,000. After incorporating the revisions on the Assumptions Sheet, use Excel's Goal Seek function and set quarterly operating income to \$1,000,000 by changing cell I4 – Unit Volume Sensitivity – on the Assumptions Sheet.
 - (b) After shifting the sales mix per month from PID-B to PID-P by inserting 5.0% into cell I12 – Overall Sales Mix Sensitivity – on the Assumptions Sheet, an increase of 16.9% in total unit PID sales would achieve a quarterly operating income of \$1,000,000. This result is obtained by again using Excel's Goal Seek function and setting quarterly operating income to \$1,000,000 by changing cell I4 – Unit Volume Sensitivity – on the Assumptions Sheet.
 - (c) Considering that PID-P does not achieve sales growth expectations, and that the sales mix remains constant at 80% for PID-B and 20% for PID-P throughout the projection period, then the differential operating income would be \$587,532 and line-of-credit balance would be \$479,048 relative to the original (baseline) sales mix assumptions. To hold the sales mix constant at 80%/20%, set cells F13 to I13 – Sales Mix Sensitivity – equal to zero.
3. (a) Assuming a cost increase of \$21.00 per PID-P beginning July, the projected operating income for the quarter is \$632,886, while the ending line-of-credit balance is \$629,871. To achieve this result, add \$21 to cells F22 to I22 – PID-P Unit Cost – on the Assumptions Sheet.
 - (b) To maintain the same level of quarterly operating profit as before the cost increase, total unit PID sales volume must increase by 7.5%. Use Excel's Goal Seek to set the quarterly operating income to \$768,473 by changing cell I4 – Unit Volume Sensitivity – on the Assumptions Sheet.
 - (c) Yes, OWP could achieve the baseline operating income as before the cost increase just by shifting sales mix from PID-B toward PID-P, without increasing sales volume. However, considering the cost increase of \$21.00 per PID-P, this equal monthly sales mix shift

	A	B	C	D	E	F	G	H
1	Out-West Products, Inc.							
2	Detailed Operating Schedules							
3								
4								
5	Schedule a: Sales plan				July	August	September	Total
6	Weighted average sales price				\$ 257.74	\$ 256.91	\$ 257.42	
7								
8	Total Units				10,200	11,400	12,700	34,300
9	Credit sales, 100%				\$2,628,948	\$2,928,740	\$3,269,183	\$8,826,871
10								
11								
12	Schedule b: Cash collections				July	August	September	Total
13	From current month's sales				\$525,790	\$585,748	\$653,837	\$1,765,374
14	From sales 1 month before				1,196,000	1,314,474	1,464,370	3,974,844
15	From sales 2 months before				579,600	717,600	788,684	2,085,884
16	Total collections				\$2,301,390	\$2,617,822	\$2,906,891	\$7,826,103
17								
18	NOTE: Actual A/R should be collected in July and August							
19								
20	Schedule c: Purchases plan in units				July	August	September	Total
21	Desired units in ending inventory				8,550	9,525	9,900	9,900
22	Plus units sold				10,200	11,400	12,700	34,300
23	Total needed				18,750	20,925	22,600	44,200
24	Less beginning inventory				7,650	8,550	9,525	7,650
25	Required purchases				11,100	12,375	13,075	36,550
26								
27								
28	Schedule d: Purchases plan (dollars)				July	August	September	Total
29	Weighted average unit cost				\$ 170.40	\$ 172.50	\$ 175.30	
30								
31	Desired ending inventory				\$ 1,456,920	\$ 1,643,063	\$ 1,735,470	\$1,735,470
32	Plus cost of goods sold				1,727,370	1,948,545	2,199,640	5,875,555
33	Total requirements				3,184,290	3,591,608	3,935,110	\$7,611,025
34	Less beginning inventory				1,292,850	1,456,920	1,643,063	1,292,850
35	Total purchases				\$1,891,440	\$2,134,688	\$2,292,048	\$6,318,175
36								
37								
38	Schedule e: Cash pmts for purchases				July	August	September	Total
39	From accounts payable (6/30)				\$889,075			\$889,075
40	July				945,720	\$945,720		1,891,440
41	August					1,067,344	\$1,067,344	2,134,688
42	September						1,146,024	1,146,024
43	Total payments				\$1,834,795	\$2,013,064	\$2,213,368	\$6,061,226
44								
45	NOTE: Actual A/P should be paid in July only							

Exhibit 9. Plans and schedules solutions to Parts 1a and 1b.

percent from PID-B toward PID-P, without increasing sales volume, would be 2.45%. Use Excel's Goal Seek function and set the quarterly operating income to \$768,473 by changing cell I12 – Overall Sales Mix Sensitivity – on the Assumptions Sheet. Prior to performing this analysis, be sure cell I4 – Unit Volume Sensitivity – on the Assumptions Sheet has been changed back to zero.

	A	B	C	D	E	F	G	H	I	
1	Out-West Products, Inc.									
2	Projected Income Statements and Balance Sheet									
3										
4										
5	Projected Income Statements									
6			<i>Schedule</i>				July	August	September	Total
7	Sales	(a)					\$2,828,948	\$2,928,740	\$3,269,183	\$8,826,871
8	Less variable expenses									
9	Cost of goods sold	(d)					1,727,370	1,948,545	2,199,840	5,875,555
10	Sales commissions						131,447	146,437	163,459	441,344
11	Shipping & handling						153,000	171,000	190,500	514,500
12	Total variable expenses						2,011,817	2,265,982	2,553,599	6,831,399
13	Contribution margin						617,131	662,758	715,584	1,995,473
14	Less fixed expenses									
15	Wages and salaries						\$315,000	\$315,000	\$315,000	945,000
16	Rent						26,000	26,000	26,000	78,000
17	Utilities						9,500	9,500	9,500	28,500
18	Insurance expense						4,500	4,500	4,500	13,500
19	Depreciation expense						16,000	16,000	16,000	48,000
20	Other selling & admin.						38,000	38,000	38,000	114,000
21	Advertising campaign						-	-	-	-
22	Total fixed expenses						409,000	409,000	409,000	1,227,000
23										
24	Operating income						208,131	253,758	306,584	768,473
25	Less: interest expense						1,482	2,147	3,154	6,783
26	Net income before taxes						\$208,668	\$251,611	\$303,430	\$761,710
27										
28										
29	Projected Balance Sheet								September	
30	Assets									
31	Cash & equivalents									\$40,000
32	Accounts receivable									\$3,493,969
33	Inventory									\$1,735,470
34	Prepaid insurance									6,500
35	Fixed assets, net of depreciation									1,532,000
36	Total assets									\$6,807,939
37	Liabilities and Stockholders' Equity									
38	Accounts payable, purchases									\$1,146,024
39	Interest payable									3,154
40	Line-of-credit									473,076
41	Dividends payable									\$20,000
42	Capital stock, no par									1,750,000
43	Retained earnings									3,415,685
44	Total liabilities and stockholders' equity									\$6,807,939
45										EQUAL

Exhibit 10. Projected income statements and balance sheet solutions to Parts 1.2 and 1.3.

B. Income vs. cash flow and benchmarking analysis

- (a) The quality of income is (0.63) (i.e. $(7,826,103 - 8,306,179) / 761,710$). Since disbursements (i.e. cash payments) exceed cash collections, the firm's net cash inflow is negative and the immediate impression is that the firm has a poor quality of income and weak liquidity. This

	A	B	C	D	E	F	G	H	I	
1	Out-West Products, Inc.									
2	Projected Statements of Cash Flow									
3										
4	Projected Statements of Cash Flow									
5	Internal Budget Format									
6										
7			<i>Schedule</i>			July	August	September	Total	
8	Beginning cash balance					\$ 47,000	\$ 40,000	\$ 40,000	\$ 47,000	
9	Cash collections	(b)				2,301,390	2,617,822	2,906,891	7,826,103	
10	Total cash available					2,348,390	2,657,822	2,946,891	7,873,103	
11	Cash disbursements									
12	Inventory purchases	(e)				\$1,834,795	\$2,013,064	\$2,213,368	6,061,226	
13	Variable operating expenses					284,447	317,437	353,959	955,844	
14	Fixed operating expenses					388,500	388,500	388,500	1,165,500	
15	Capital acquisitions					-	-	\$100,000	100,000	
16	Interest					-	1,462	2,147	3,609	
17	Dividends					20,000	-	-	20,000	
18	Total disbursements					2,527,742	2,720,463	3,057,973	8,306,179	
19	Minimum cash balance					40,000	40,000	40,000	40,000	
20	Total cash needed					2,567,742	2,760,463	3,097,973	8,346,179	
21	Cash excess (deficit)					(219,353)	(102,641)	(151,082)	(473,076)	
22	Financing									
23	Borrowing					219,353	102,641	151,082	473,076	
24	Repayments					-	-	-	-	
25	Total cash from financing					219,353	102,641	151,082	473,076	
26	Ending cash balance					\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	
27										
28	Line-of-Credit Balance					-	219,353	321,994	473,076	473,076
29										
30	Projected Statements of Cash Flow									
31	External Reporting Format (SFAS 95 - Indirect Method)									
32										
33						July	August	September	Total	
34	<i>Cash Flows from Operating Activities</i>									
35	Net income					\$ 206,668	\$ 251,611	\$ 303,430	\$ 761,710	
36	Adjustments to reconcile net income to net cash									
37	provided by operating activities									
38	Depreciation and noncash deductions					20,500	20,500	20,500	61,500	
39	Decrease/(Increase) in accounts receivable					(327,558)	(310,918)	(362,292)	(1,000,769)	
40	Decrease/(Increase) in inventory					(164,070)	(186,143)	(92,408)	(442,620)	
41	Increase/(Decrease) in accounts payable					56,645	121,624	78,680	256,949	
42	Increase/(Decrease) in interest payable					1,462	684	1,007	3,154	
43	Net Cash Provided by Operating Activities					(206,353)	(102,641)	(51,082)	(360,076)	
44										
45	<i>Cash Flows from Investing Activities</i>									
46	Capital acquisitions					-	-	(100,000)	(100,000)	
47	Net Cash used by Investing Activities					-	-	(100,000)	(100,000)	
48										
49	<i>Cash Flows from Financing Activities</i>									
50	Line of credit					219,353	102,641	151,082	473,076	
51	Payment of cash dividends					(20,000)	-	-	(20,000)	
52	Net Cash Provided by Financing Activities					199,353	102,641	151,082	453,076	
53										
54	<i>Net Change in Cash</i>					(7,000)	-	(0)	(7,000)	
55	<i>Cash at Beginning of Month</i>					47,000	40,000	40,000	47,000	
56	Cash at End of Month					\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	
57										
58	Difference					EQUAL	EQUAL	EQUAL	EQUAL	

Exhibit 11. Projected statements of cash flow solution to Part 1.4.

cash-strapped situation is potentially harmful to the overall future of the company and its shareholders. The income does not support the cash flow because of the observed gap between income and cash flow, which in the long-term could lead to insolvency.

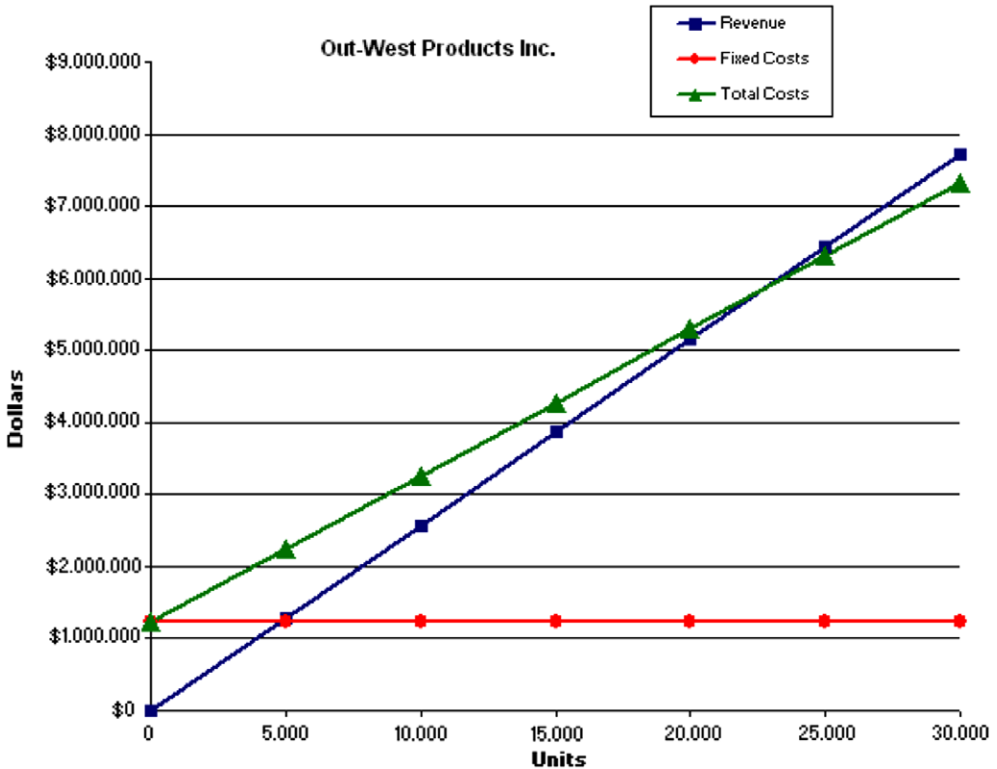


Exhibit 12. Cost-volume-profit graph solution to Part 1.5.

- (b) Income is greater than cash flow primarily because of relatively lower inventory turns and higher ending accounts receivables compared to both the key competitor and industry average at large. This suggests necessary improvements in inventory management and cash conversions.
- (c) Major business risks that could affect Out-West's financial strength include cash flow problems, along with technological obsolescence of inventory.
2. (a) Benchmarking data for OWP are as follows: operating margin percentage, 8.7% calculated as operating income of \$768,473 divided by sales of \$8,826,871; days sales in ending accounts receivable, 35.62 days calculated as accounts receivable of \$3,493,969 divided by days sales of \$98,076 (sales of \$8,826,871 divided by 90); inventory turnover, 13.56 times determined by dividing annualized cost of goods sold ($\$5,875,555 \times 4$) by average inventory ($(\$1,735,470 + \$1,292,850)/2$); and asset turnover, 5.2 times determined by dividing annualized sales ($\$8,826,871 \times 4$) by average total assets ($(\$6,807,939 + \$5,333,050)/2$).
- (b) The operating margin for Out-West is about 0.2% points lower than its key competitor. Since operating margin is an indicator of operating efficiency, a lower operating margin indicates a lesser ability to control costs and expenses relative to competitors.

Days Sales in Ending Accounts Receivables for Out-West is more than 7.5 days higher than its key competitor. This metric involves the average number of days required to collect accounts receivables and thus the company's receivables management and liquidity. Being higher than both the key competitor and the industry average shows that OWP is less efficient in cash conversion of receivables.

The Inventory Turnover for Out-West is almost three turns lower than its key competitor, which indicates a lower rate at which OWP is moving inventory out from stock. Lower inventory turnover adversely impacts gross margins due to falling prices and increases the risk of inventory obsolescence.

The Asset Turnover for Out-West is about 0.4 times lower than its key competitor. Asset Turnover indicates how often assets are converted into sales, hence a lower turnover rate for OWP compared to the key competitor (as well as the industry) indicates that OWP is less effectively using its assets to generate sales.

3. (a) The percentage of ending inventory required to reach the key competitor level of inventory turnover of 17.2 times is 62% of the following month's sales. Use Excel's Goal Seek function and set cell I54 – Inventory Turnover – on the Assumptions Sheet to 17.2 by changing cell D34 – Ending inventory as a percentage of next month's sales – on the Assumptions Sheet to achieve this result. The effect on the ending line-of-credit (or cash) balance is a decrease of 59.5% (from \$473,076 to \$191,524).
- (b) Assuming that 50% of all sales are collected in the month following sale, the shift in receivables collection pattern required to achieve the key competitor's days' sales in ending accounts receivable metric of 28 days would require that 32% of credit sales to be collected in the month of sale. Use Excel's Goal Seek function and set cell I57 – Days Sales – on the Assumptions Sheet to 28.0 days by changing cell D39 – Percentage of sales collected in the current month – on the Assumptions Sheet to achieve this result. If OWP achieves key competitor performance on the receivables metric, OWP's ending line-of-credit (or cash) balance would be completely eliminated.

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